ABSTRACT OF THE DISCLOSURE

1   A computer hardware configuration for performing the pseudo-spectral time-domain (PSTD)

2   method on data. The hardware configuration includes a forward fast Fourier transform (FFT) unit

3   that calculates a forward fast Fourier transform (FFT) from the data, and a complex multiplication

4   unit that receives the FFT-processed data and calculates a spatial derivative in the frequency domain

5   from the FFT-processed data. The hardware configuration further includes an inverse fast Fourier

6   transform (IFFT) unit that converts the spatial derivative in the frequency domain from the complex

7   multiplication unit into the time domain, and a computation engine that solves a PSTD equation

8   based upon the spatial derivative in the time domain received from the IFFT unit.